agri-fax
Field Crops
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Varietal Description of Duel Spring Barley

Origin and breeding

Duel is a six-rowed, blue aleurone, malting type barley developed by Busch Agricultural Resources Inc. of Berthoud, Colorado. It is derived from the cross Morex//6B75-1374/M-31 completed in 1978. The F_1 generation was grown in the early spring of 1979 indoors. F_2 plants were grown outdoors at Bentley, Alberta, later that year. A single seed from an F_2 head selection was multiplied indoors and an F_4 head-row selected in 1980 at Bentley. Malting quality prediction tests on remnant F_4 seed assisted in the selection of an F_5 seed increase plot in Yuma, Arizona, for yield testing an F_2 derived F_6 bulk at Bentley, Watrous, and Portage la Prairie in 1981 and throughout in 1983 when 100 head-rows were grown and only selected heads chosen and bulked for increase in New Zealand during the winter of 1983-84. Breeder seed increases were initiated in 1985 at Berthoud, Colorado. Breeder seed will be re-constituted from head-rows as necessary.

Varietal characteristics

Plant characteristics

Juvenile growth habit: intermediate

Coleoptile color: green

Leaves: medium green; medium width and length; glabrous sheath and blade

Flag leaf: medium green; medium width and length; intermediate attitude; white auricles; slighty waxy sheath

Stem: grass-green, waxy; medium thick; 5 nodes; slightly snaky neck; v-shaped collar; 10-15 cm exsertion of spike above flag leaf

Plant height: tall; 3 cm shorter than Bonanza

Heading: late; 2 days later than Bonanza

Resistance to shattering: good

Resistance to neck breakage: good

Tolerance to drought: fair

Disease reactions: susceptible to loose smut (*Ustilago nuda*), net blotch (*Helminthosporium teres*), scald (*Rhynchosporium secalis*) and Septoria leaf blotch (*Septoria passerinii*); moderately susceptible to covered smut (*Utilago hordei*) and black semi-loose smut (*Ustilago nigra*); moderately resistant to root rot (*Helminthosporium sativum*), stem rust (*Puccinia graminis*) and the spot form of net blotch (*Helminthosporium teres*).

Spike characteristics

Type: six-row

Shape: tapering; medium long; lax; lateral kernels overlap up to one-half of spike

Attitude: semi-nodding

Lemma: long, semi-smooth awns; glabrous; red tip

Glume: medium long; long hairs, midline to band restricted; long semi-smooth awns with red tip

Rachis: slightly tapered segments; curved first rachis internode; few, long hairs

Kernel characteristics

Aleurone: blue

Rachilla: mid-long with long hairs; no abnormal rachillas

Hull: covered; slightly wrinkled lemma

Size: medium, approximately 9 x 3 mm

Lemma veins: green with few barbs

Basal marking: transverse crease

Malting quality: good

Protein content: intermediate

Acceptable variants

up to 0.1% taller plants

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Table 1. Yield (kg/ha) of Duel and check variety Bonanza, Western Co-operative Six-Row Barley Trials, 1985

Locations	Varieties Bonanza	Duel
Brandon	5550	6303
Glenlea	7736	8934
Melfort	5991	6537
Indian Head	6707	6870
North Battleford	3589	4625
Morden	4031	4820
Portage la Prairie	5402	5552
Saskatoon	4089	4291
Regina	4268	4694
Scott	1882	2087
Lethbridge	7742	8474
Watrous	4335	4665
Lacombe	5299	6276
Calmar	4651	6251
Evansburg	2466	3054
Olds	2823	3221
Beaverlodge	3346	3705
Ft. Vermilion	2941	3258

Performance and adaptation

Duel is a high yielding variety with moderate resistance to root rot. It has potential malting quality but is later maturing than Bonanza.

Maintenance of breeder seed

Busch Agricultural Resources Inc., Berthoud, Colorado

Canadian distributor

Alberta Wheat Pool, Saskatchewan Wheat Pool and Manitoba Pool Elevators

Recommended by

Western Canada Registration Recommending Committee on Barley and Oats

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Table 2. Summary of agronomic performance of Duel and Bonanza, Western Co-operative Six-Row Barley Trials, 1985

Variety	Heading (days)	Lodging (1-9)*	Height (cm)	Maturity (days)	Yield (kg/ha x 10^2)	1000 seeds	Test Wt. (g)
Bonanza	57.6	2.9	89.1	94.3	46.0	38.7	60.8
Duel	60.2	3.4	84.6	95.1	51.9	40.7	60.3

* Lodging 1-9, 1 = good resistance

Table 3. Disease reaction of Duel and Bonanza check variety, Western Co-operative Six-Row Barley Trials, 1985

Variety	Composite Stem Rust*	Spot Blotch	Scald	Net Blotch[1]	Net Blotch 102[2]	Net Blotch 858[3]	Net Blotch 857[4]
Bonanza	15MR	4.0	7.5	5.0	9	9	5
Duel	30MR	4.5	9.0	5.0	7	9	3

Variety	Scald 837	Septoria 692	Root Rot % Sask.	Root Rot % Scott	% Smut Infection nuda	hordei	nigra
Bonanza	S	S	24	45	57	13	12
Duel	S	S	22	37	71	21	17

* Data from University of Saskatchewan; from natural field infection located at Carrot River and Shellbrook, Saskatchewan.

Scale: 0-9; 9 = severe

NOTE: No barley stripe mosaic detected in the second year entries whengrown in the field; rating scale 1-10 where 10 is severe.

[1]Spot form of net blotch; data from Winnipeg Research Station

[2]Produces "normal" net blotch symptoms and reactions; data from Winnipeg Research Station

[3] Produces "normal" net blotch symptoms with a different virulence spectrum; data from Winnipeg Research Station

[4]Produces spot type symptoms; data from Winnipeg Research Station